UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,007	08/22/2006	Johannes Kowoll	KOWOLL.J-1 PCT	9342

25889 7590 07/06/2009

COLLARD & ROE, P.C.
1077 NORTHERN BOULEVARD
ROSLYN, NY 11576

EXAMINER	
YOUNG, NATASHA E	
ART UNIT	PAPER NUMBER
1797	
MAIL DATE	DELIVERY MODE
07/06/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,007	KOWOLL, JOHANNES	
	Examiner	Art Unit	
	NATASHA YOUNG	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 May 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/18/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1 and 4-8 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4, 5, and 7-10 of copending Application No. 10/583572 in view of Tagamolila (US 5,043,500).

Copending Application No. 10/583572 discloses all the limitation of the claims except mainly radial flow of the gas mixture through a catalyser packing.

Tagamolila discloses mainly radial flow of the gas mixture through a catalyser packing (see column 6, lines 24-43 and figure 1) and the radial flow is an obvious design choice (see column 8, line 37 through column 9, line 14).

The combination of the prior art elements of a radial flow distributor in a synthesis reactor with catalyser packing resulting in mainly radial flow of the gas mixture through a catalyser packing would have yielded the predictable result of more intimate contact of gas with catalyser packing.

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tagamolila (US 5,043,500) in view of Mendelsohn et al (US 3,855,330), Smith et al (US 4,223,843), and Skraba (US 4,994,239).

Regarding claim 1, Tagamolila discloses a method for nozzle jetting of oxygen into a synthesis reactor, e.g. for oxi-dehydration (see Abstract), with mainly radial flow of the gas mixture through a catalyser packing, where oxygen is added to a distributor system as a mixture of oxygen, effluent, and steam, and is then jetted on the catalyser surface at an angle through several exit openings in the distributor system (see column 6, line 24 through column 8, line 24).

Mendelsohn et al discloses oxygen enters the reactor as a pure gas or a gas containing it, generally air (see column 4, lines 21-40).

Because these oxygen feeds were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute an oxygen feed of pure gas or a gas containing it, generally air, for an oxygen feed of a mixture of oxygen, effluent, and steam.

Tagamolila and Mendelsohn do not disclose that oxygen is added to a ring distributor system and is then jetted on to the catalyser surface at an angle to the vertical through several exit openings in the ring distributor system.

Smith et al disclose a distribution ring (25) with nozzles (30 and 31) for delivering an oxygen-carrying gas such as air to a zone of spent catalyst in a regenerator (see figure 1 and column 3, line 16 through column 4, line 49).

Skraba discloses a distributor with a nozzle directed substantially vertically downward (see figure 5 and column 6, lines 4-27).

Because these two examples of placement of distributor nozzles were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute a distributor with a nozzle directed substantially vertically downward for a distributor with two rows of nozzles.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Tagamolila and Mendelsohn et al with the teachings of Smith et al and Skraba such that oxygen is added to a ring distributor system and is then jetted on to the catalyser surface at an angle to the vertical through several exit openings in the ring distributor system in order to evenly distribute the oxygen onto the catalyst.

Regarding claims 2-4, Tagamolila and Mendelsohn et al do not disclose a method wherein the nozzle jetting of the oxygen is carried out from the cylindrical plane in the interior of the catalyser bed in the direction on to the reactor wall; wherein the nozzle jetting is carried out with the help of several parallel pipes having exit openings

and forming a cylindrical inner axial plane; and wherein the nozzle jetting of the oxygen takes place in a cylindrical axial plane approx. 50 to 300 mm before the cylindrical inner wall of the catalyser bed, which ensures an oxygen dwelling time of less than or equal to 1 sec. in a chamber before the catalyser bed.

Smith et al disclose a distribution ring (25) with nozzles (30 and 31) for delivering an oxygen-carrying gas such as air to a zone of spent catalyst in a regenerator (see figure 1 and column 3, line 16 through column 4, line 49).

Skraba discloses a distributor with a nozzle directed substantially vertically downward (see figure 5 and column 6, lines 4-27).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Tagamolila and Mendelsohn et al with the teachings of Smith et al and Skraba such that oxygen is added to a ring distributor system and is then jetted on to the catalyser surface at an angle to the vertical through several exit openings in the ring distributor system resulting in the nozzle jetting of the oxygen being carried out from the cylindrical plane in the interior of the catalyser bed in the direction on to the reactor wall and the nozzle jetting is carried out with the help of several parallel pipes having exit openings and forming a cylindrical inner axial plane in order to evenly distribute the oxygen onto the catalyst.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have wherein the nozzle jetting of the oxygen takes place in a cylindrical axial plane approx. 50 to 300 mm before the cylindrical inner wall of the catalyser bed, which ensures an oxygen dwelling time of less than or equal to 1 sec. in

a chamber before the catalyser bed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (see MPEP 2144.05 (II-A)).

Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tagamolila (US 5,439,859), Mendelsohn et al (US 3,855,330), Smith et al (US 4,223,843), and Skraba (US 4,994,239) as applied to claim 1 above, and further in view of Bahnisch (EP 364664 A1).

Regarding claim 5, Tagamolila discloses a device for nozzle-jetting of oxygen into a synthesis reactor, e.g. for oxi-dehydration with mainly radial flow of the gas mixture to a catalyser packing, particularly for conducting a method as claimed in claim 1 (see column 6, line 24 through column 8, line 24).

Tagamolila and Mendelsohn et al do not disclose that there is a ring distributor with several pipes with exit openings forming an inner cylindrical plane before the cylindrical inner surface of the catalyser bed, whereby the exit openings are aligned to release the oxygen on to the cylindrical catalyser surface at an angle to the vertical.

Smith et al disclose a distribution ring (25) with nozzles (30 and 31) for delivering an oxygen-carrying gas such as air to a zone of spent catalyst in a regenerator (see figure 1 and column 3, line 16 through column 4, line 49).

Skraba discloses a distributor with a nozzle directed substantially vertically downward (see figure 5 and column 6, lines 4-27).

Bahnisch discloses a distributor with several pipes with exit openings forming an inner cylindrical plane before the cylindrical inner surface of the catalyser bed, whereby

the exit openings (16) are aligned to release a gas on to the cylindrical catalyser surface at an angle to the vertical (see Abstract and figures 1 and 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Smith et al and Skraba with the teachings of Bahnisch such that the a ring distributor with several pipes with exit openings forming an inner cylindrical plane before the cylindrical inner surface of the catalyser bed, whereby the exit openings are aligned to release the oxygen on to the cylindrical catalyser surface at an angle to the vertical for improved mixing of the feed gas and the reaction gases.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Tagamolila and Mendelsohn et al with the teachings of Smith et al, Skraba, and Bahnisch such that the a ring distributor with several pipes with exit openings forming an inner cylindrical plane before the cylindrical inner surface of the catalyser bed, whereby the exit openings are aligned to release the oxygen on to the cylindrical catalyser surface at an angle to the vertical for improved mixing of the feed gas and the reaction gases.

Regarding claims 6-8, Tagamolila and Mendelsohn et al do not disclose a device wherein the gas exit openings are aligned in alternating sequence to adjacent exit openings of an adjacent ring pipe; wherein adjacent exit gas openings reveal different flow exit directions; and wherein the gas exit openings are designed as holes or nozzles.

Bahnisch discloses a device wherein the gas exit openings (16) are aligned in alternating sequence to adjacent exit openings of an adjacent ring pipe; wherein adjacent exit gas openings (16) reveal different flow exit directions; and wherein the gas exit openings (16) are designed as holes or nozzles (see Abstract and figures 1 and 4).

Response to Arguments

Applicant's arguments filed May 18, 2009 have been fully considered but they are not persuasive.

The applicant argues that the non-statutory obviousness-type double patenting rejection should be reconsidered, since copending U.S. Application 10/583572 does not disclose the mainly radial flow of the gas mixture through a catalyzer packing, which was said to be shown by Tagamolila and because a radial reactor is completely different from an axial reactor and is much cheaper than an axial reactor (see pages 2-3).

The examiner disagrees.

The applicant does not disclose that these were the reasons largely radially flow was used.

In addition, copending U.S. Application 10/583572 discloses a method for nozzle-jetting oxygen into a synthesis reactor, e.g. for oxy-dehydration, for largely axial flow of the gas mixture through a catalyst bed (see claim 1).

Tagamolila discloses a dehydrogenation process, for largely radial flow of a gas mixture through an annular catalyst bed, and a line (54) carries the mixture of steam, air, and effluent from the eductor to nozzles (56) where it reenters chamber (30) and is

redistributed in chamber (30) by a distributor (58); the admixture of steam and oxygen passes through a static mixer (60) along with the hydrogenation zone effluent to make sure that the reactants are well mixed; and from mixer (60), the reactants enter a centerpipe (62) that distributes them into an annular bed (64) of oxidation catalyst (see Abstract; figure 1; column 6, lines 24-43; and column 7, lines 9-44) resulting in mainly radial flow of the gas mixture through a catalyzer packing.

Regarding claim 1, the applicant argues that the primary reference to Tagamolila fails to disclose or suggest a method for nozzle jetting of oxygen into a synthesis reactor in which oxygen is added to a ring distributor system and is then jetted on to the catalyzer surface at an angle to the vertical through several exit openings in the ring distributor and that the examiner's position that Tagamolila discloses a method "where oxygen is added to a distributor system as a mixture of oxygen, effluent, and steam and is then jetted on the catalyzer surface at an angle through several exit opening in the distributor system..." is unfounded (see Remarks, pages 4-6).

The examiner agrees that Tagamolila does not disclose a method for nozzle jetting of oxygen into a synthesis reactor in which oxygen is added to a ring distributor system and is then jetted on to the catalyzer surface at an angle to the vertical through several exit openings in the ring distributor.

However, the examiner believes that Tagamolila discloses a method "where oxygen is added to a distributor system as a mixture of oxygen, effluent, and steam and is then jetted on the catalyzer surface at an angle through several exit opening in the distributor system...", since Tagamolila discloses a line (54) carries the mixture of

steam, air, and effluent from the eductor to nozzles (56) where it reenters chamber (30) and is redistributed in chamber (30) by a distributor (58); the admixture of steam and oxygen passes through a static mixer (60) along with the hydrogenation zone effluent to make sure that the reactants are well mixed; and from mixer (60), the reactants enter a centerpipe (62) that distributes them into an annular bed (64) of oxidation catalyst (see column 7, lines 9-44).

In response to applicant's argument that Skraba and Mendelsohm et al is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both references disclose gas distribution in a chemical reactor, which the examiner believes is analogous art.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATASHA YOUNG whose telephone number is 571-270-3163. The examiner can normally be reached on Mon-Thurs 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. Y./
Examiner, Art Unit 1797

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797